

Total solder points: 240

Skill level :

Beginner 1 2 3 4 5 Advanced

HIGH-Q
velleman-kit



LIGHT COMPUTER

K5201

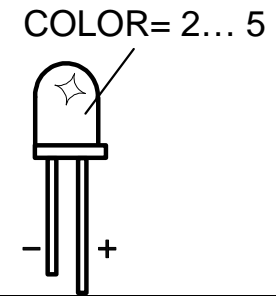
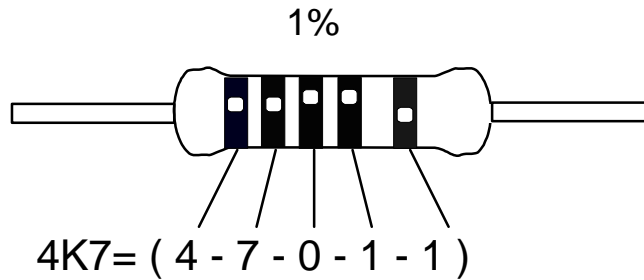
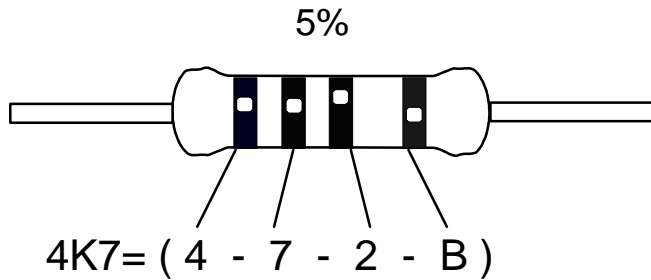
Features:

- Sixteen different patterns and 7 outputs provide a unique light show
- Easy pattern selection with rotary switch
- Adjustable effect speed
- External oscillator input
- Daisy-chain units to create even bigger light shows
- Special setting for two linked units to create 14 channel operation
- 7 LED pattern indication

Specifications :

- Power supply : 7.5-9VAC or 12VDC / 250mA
- Load : 24-240VAC
- 1.5A/channel max.
- Not suitable for inductive loads
- Dimensions : 134x79mm (5.3"x3.1")

modifications reserved

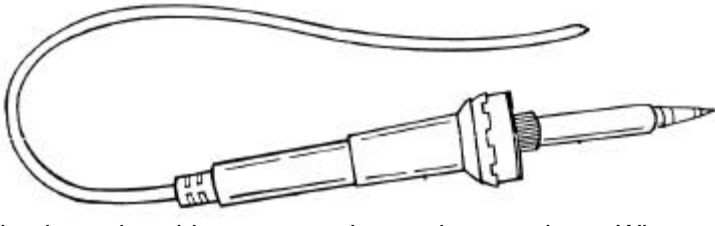
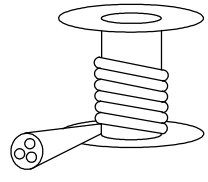
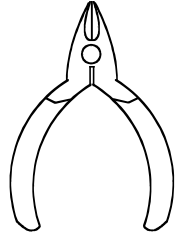
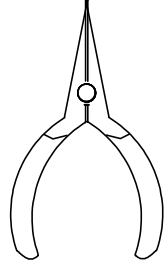



C O D E	I	P	E	SF	S	DK	N	D	GB	F	NL	C O D E
	<i>CODICE COLORE</i>	<i>CODIGO DE CORES</i>	<i>CODIGO DE COL- ORES</i>	<i>VÄRI KOODI</i>	<i>FÄRG SCHEMA</i>	<i>FARVE KODE</i>	<i>FARGE KODE</i>	<i>FARB KODE</i>	<i>COLOUR CODE</i>	<i>CODIFI- CATION DES COU- LEURS</i>	<i>KLEUR KODE</i>	
0	Nero	Preto	Negro	Musta	Svart	Sort	Sort	Schwarz	Black	Noir	Zwart	0
1	Marrone	Castanho	Marrón	Ruskea	Brun	Brun	Brun	Braun	Brown	Brun	Bruin	1
2	Rosso	Encarnado	Rojo	Punainen	Röd	Rød	Rød	Rot	Red	Rouge	Rood	2
3	Aranciato	Laranja	Naranjado	Oranssi	Orange	Orange	Orange	Orange	Orange	Orange	Oranje	3
4	Giallo	Amarelo	Amarillo	Keltainen	Gul	Gul	Gul	Gelb	Yellow	Jaune	Geel	4
5	Verde	Verde	Verde	Vihreä	Grön	Grøn	Grønn	Grün	Green	Vert	Groen	5
6	Blu	Azul	Azul	Sininen	Blå	Blå	Blå	Blau	Blue	Blue	Blauw	6
7	Viola	Violeta	Morado	Purppura	Lila	Violet	Violet	Violet	Purple	Violet	Paars	7
8	Grigio	Cinzento	Gris	Harmaa	Grå	Grå	Grå	Grau	Grey	Gris	Grijs	8
9	Bianco	Branco	Blanco	Valkoinen	Vit	Hvid	Hvidt	Weiss	White	Blanc	Wit	9
A	Argento	Prateado	Plata	Hopea	Silver	Sølv	Sølv	Silber	Silver	Argent	Zilver	A
B	Oro	Dourado	Oro	Kulta	Guld	Guld	Guldl	Gold	Gold	Or	Goud	B

1. Assembly (Skipping this can lead to troubles !)

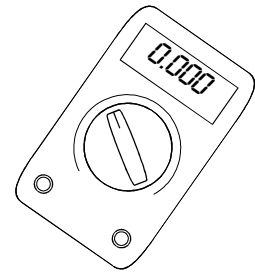
Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

1.1 Make sure you have the right tools:

- A good quality soldering iron (25-40W) with a small tip. 
- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.
- Thin raisin-core solder. Do not use any flux or grease. 
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes. 
- Needle nose pliers, for bending leads, or to hold components in place. 
- Small blade and phillips screwdrivers. A basic range is fine. 



For some projects, a basic multi-meter is required, or might be handy

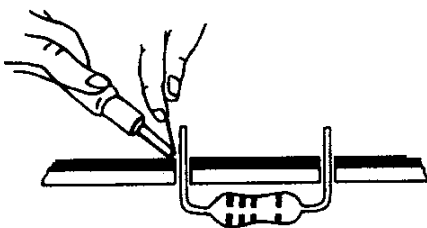


1.2 Assembly Hints :

- ⇒ Make sure the skill level matches your experience, to avoid disappointments.
- ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
- ⇒ Perform the assembly in the correct order as stated in this manual
- ⇒ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
- ⇒ Values on the circuit diagram are subject to changes.
- ⇒ Values in this assembly guide are correct*
- ⇒ Use the check-boxes to mark your progress.
- ⇒ Please read the included information on safety and customer service

* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

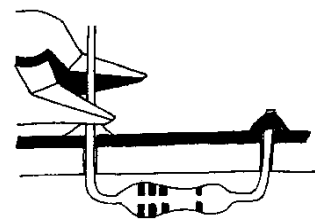
1.3 Soldering Hints :



Mount the component against the PCB surface and carefully solder the leads

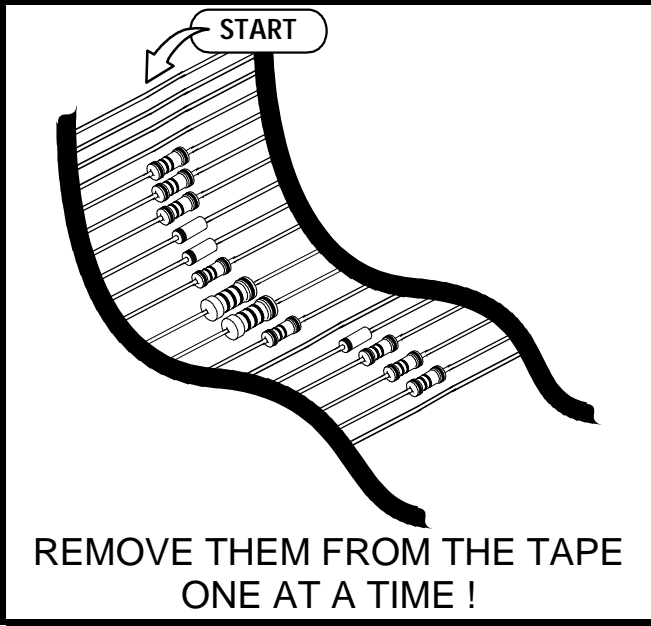


Make sure the solder joints are cone-shaped and shiny



Trim excess leads as close as possible to the solder joint

AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !



- R7 : 10K (1 - 0 - 3 - B)
- R8 : 2K2 (2 - 2 - 2 - B)
- R9 : 2K2 (2 - 2 - 2 - B)
- R10 : 2K2 (2 - 2 - 2 - B)
- R11 : 2K2 (2 - 2 - 2 - B)
- R12 : 2K2 (2 - 2 - 2 - B)
- R13 : 2K2 (2 - 2 - 2 - B)
- R14 : 2K2 (2 - 2 - 2 - B)
- R15 : 100 (1 - 0 - 1 - B)
- R16 : 100 (1 - 0 - 1 - B)
- R17 : 100 (1 - 0 - 1 - B)
- R18 : 100 (1 - 0 - 1 - B)
- R19 : 100 (1 - 0 - 1 - B)
- R20 : 100 (1 - 0 - 1 - B)
- R21 : 100 (1 - 0 - 1 - B)

1. WIRE JUMPERS

J

2. RESISTORS

R1 : 4K7 (4 - 7 - 2 - B)

R2 : 39K (3 - 9 - 3 - B)

R3 : 10K (1 - 0 - 3 - B)

R4 : 10K (1 - 0 - 3 - B)

R5 : 10K (1 - 0 - 3 - B)

R6 : 10K (1 - 0 - 3 - B)

3. DIODES (Watch the polarity !)

D1 : 1N4148

D2 : 1N4148

D3 : 1N4148

D4 : 1N4148

D5 : 1N4148

D6 : 1N4148

D7 : 1N4148

D8 : 1N4148

D9 : 1N4148

D10 : 1N4148

D11 : 1N4148

D12 : 1N4148

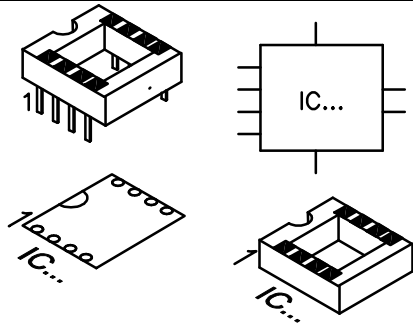
D13 : 1N4007

D14 : 1N4007

D15 : 1N4007

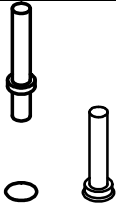
D16 : 1N4007

4. IC SOCKETS (Watch the position of the notch !)



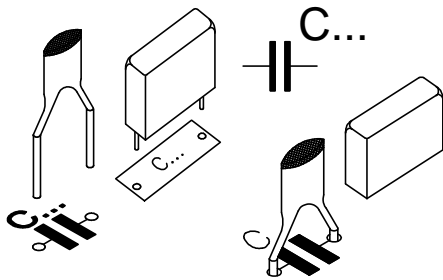
- IC1 : 8P
- IC2 : 14P
- IC3 : 28P

5. PCB PINS



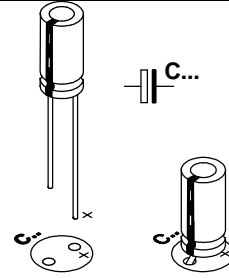
- L1, L2, L3, L4, L5, L6, L7, N, OSC, SIG, RST, 2xJ1

6. CAPACITORS



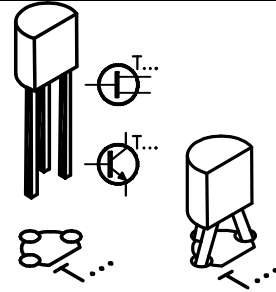
- C1 : 10nF (103)
- C2 : 100nF (104)
- C3 : 100nF (104)
- C4 : 100nF (104)

7. ELECTROLYTIC CAPACITORS (Watch the polarity!)



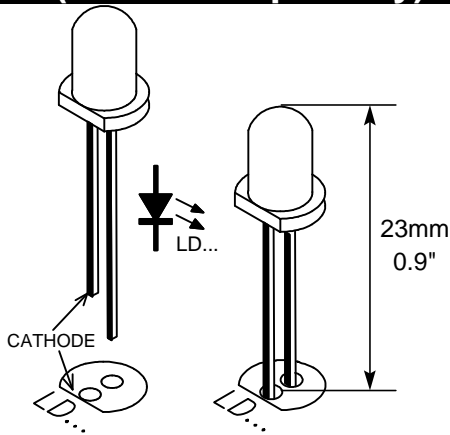
- C5 : 1 μ F
- C6 : 1 μ F
- C7 : 1000 μ F

8. TRANSISTORS



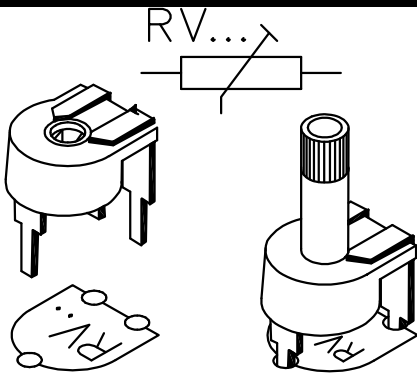
- T1 : BC547B
- T2 : BC547B
- T3 : BC547B
- T4 : BC547B
- T5 : BC547B
- T6 : BC547B
- T7 : BC547B

9. LEDs (Watch the polarity)



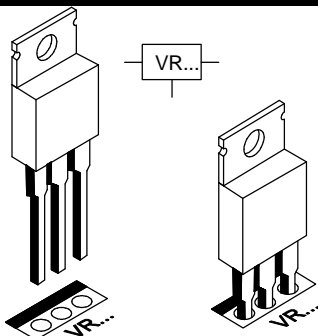
- LD1
- LD2
- LD3
- LD4
- LD5
- LD6
- LD7

10. TRIM POTENTIOMETER



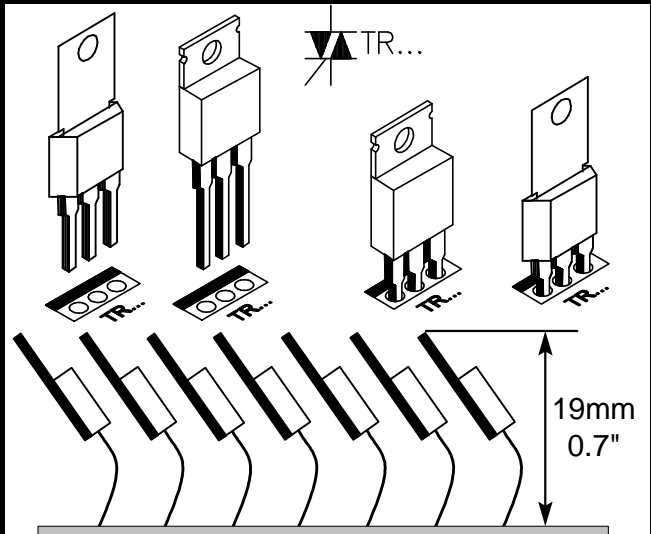
- RV1 : 1M

11. VOLTAGE REGULATOR



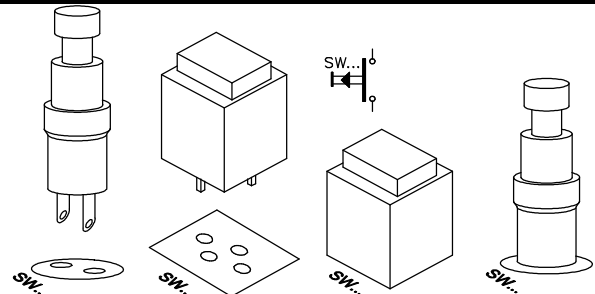
- VR1 : 7805

12. TRIACs



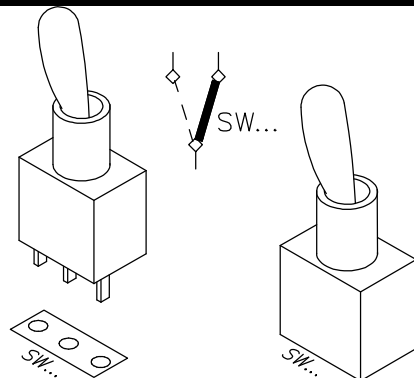
- TR1 : T410-600T; TIC216 or eq.
- TR2 : T410-600T; TIC216 or eq.
- TR3 : T410-600T; TIC216 or eq.
- TR4 : T410-600T; TIC216 or eq.
- TR5 : T410-600T; TIC216 or eq.
- TR6 : T410-600T; TIC216 or eq.
- TR7 : T410-600T; TIC216 or eq.

13. PUSHBUTTON



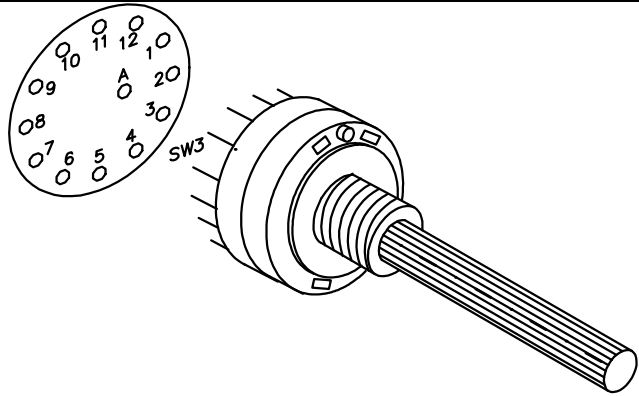
- SW1

14. SWITCH



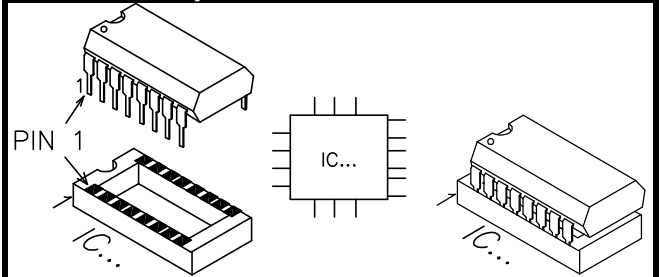
- SW2

15. ROTARY SWITCH



SW3

16. ICs (Watch the position of the notch)



- IC1 : 555
- IC2 : 4024
- IC3 : VK5201

17. ASSEMBLY, HOOK-UP AND USE

Assembly :

The 12-position rotary switch SW3 must be configured for 8 positions.

Turn the switch all the way counterclockwise.

Remove the nut and the lockwasher

Lift the stop washer and move it to position '8'

Put the lockwasher and nut back in place

Take care when connecting and using this kit. Most parts carry lethal voltages. All wires of the output section must be at least 2.5mm² (14AWG).

Power supply wiring can be done with 0.5mm² (22AWG) wire. Use fuse ratings as indicated on the connection examples.

Put an extra layer of solder on all thinned PCB tracks, to improve their current handling capabilities. This unit is suitable for use with resistive loads, such as regular incandescent lightbulbs. The unit is not suitable for use with transformer operated lighting or fluorescent lighting.

Hook-up of one unit :

Hook-up the unit as shown in the diagram.

To use the internal speed adjustment, connect 'OSC OUT' with 'SIG IN' by means of a wire jumper. A external 5V CMOS clock signal (e.g generated by a beat detector), can be connected between GND and SIG. IN.

Cascading of two units :

Two units can be hooked-up in cascade configuration, to create a 14 - channel lightshow. Hook-up both units as shown in the diagram. The 'RESET' button of the slave unit can be omitted. It is very important that each unit gets its own power supply transformer. Do not use a single transformer for both units. Make sure the 'L' (live) of both kits is connected to the same phase of the mains. Not doing so will result in damage beyond repair of both kits, and the risk of fire. Use 4mm² (12AWG) wire for the output section and use fuses rated as indicated.

Patterns 15 and 16 have been developed for cascade use. Choose pattern 15 for the master unit, and pattern 16 for the slave unit.

Use :

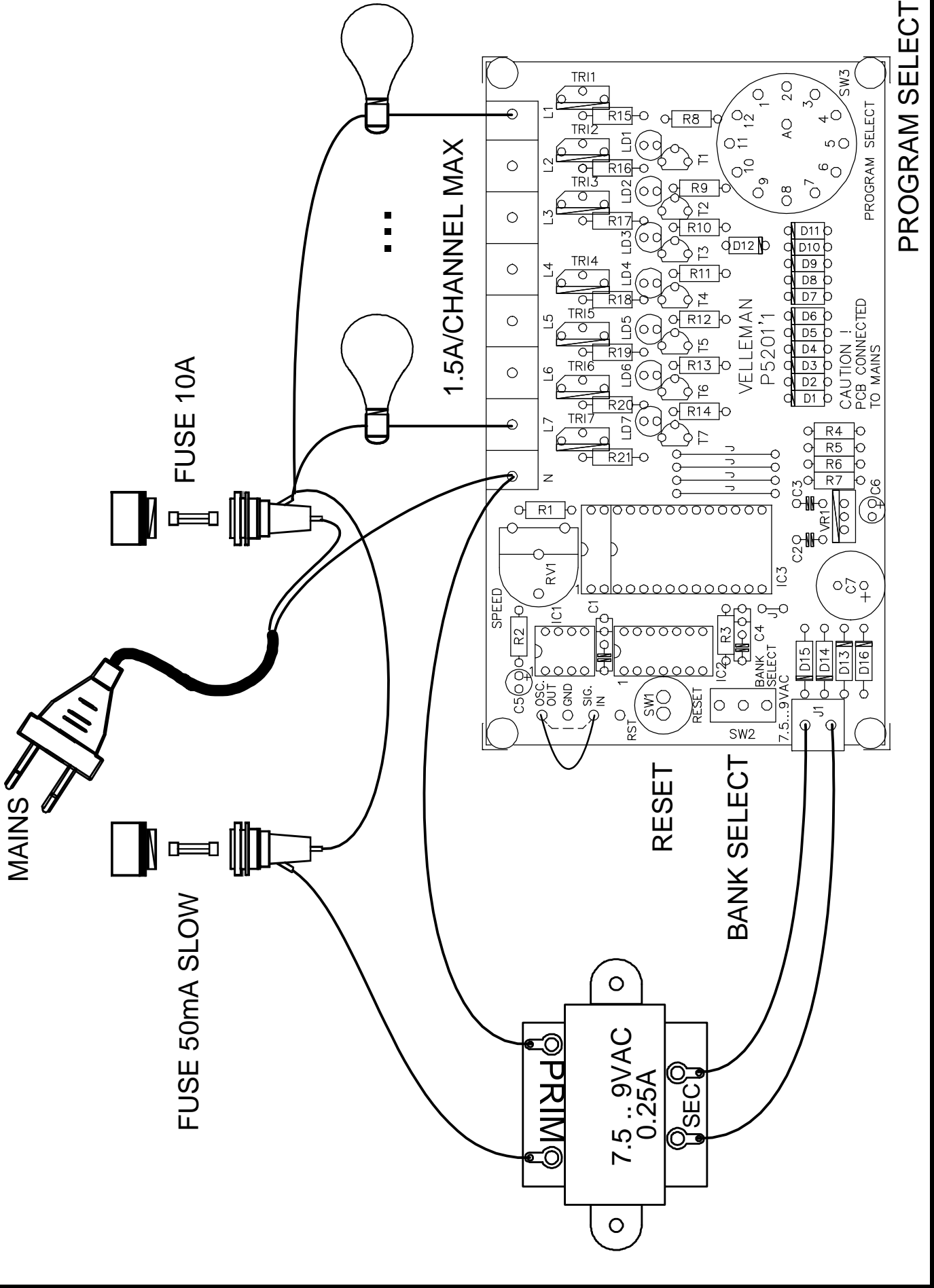
Choose between 8 different patterns with the rotary switch SW3.

SW2 allows selection of another bank of 8 patterns.

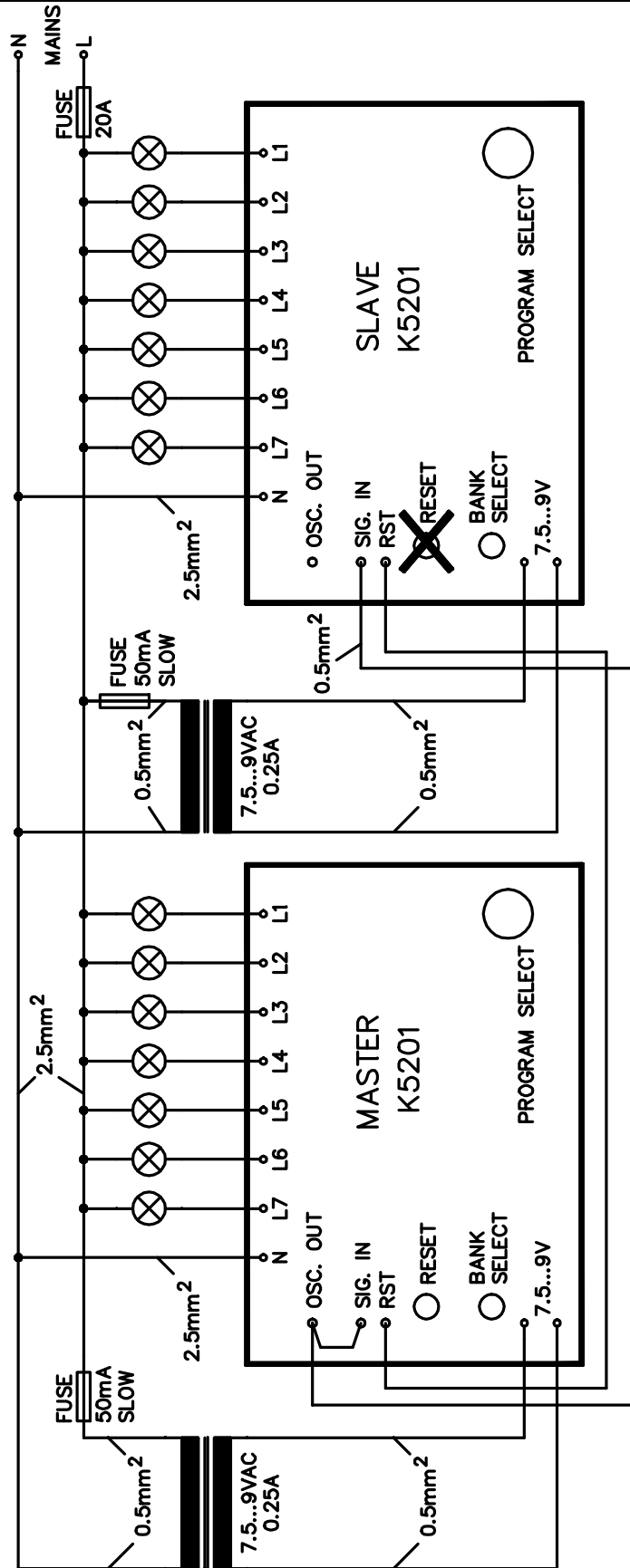
To restart the selected pattern, press 'RESET'

If internal speed control has been chosen (OSC. OUT connected to SIG. IN), you can adjust the running speed with RV1.

18. CONNECTION EXAMPLE FOR A SINGLE UNIT

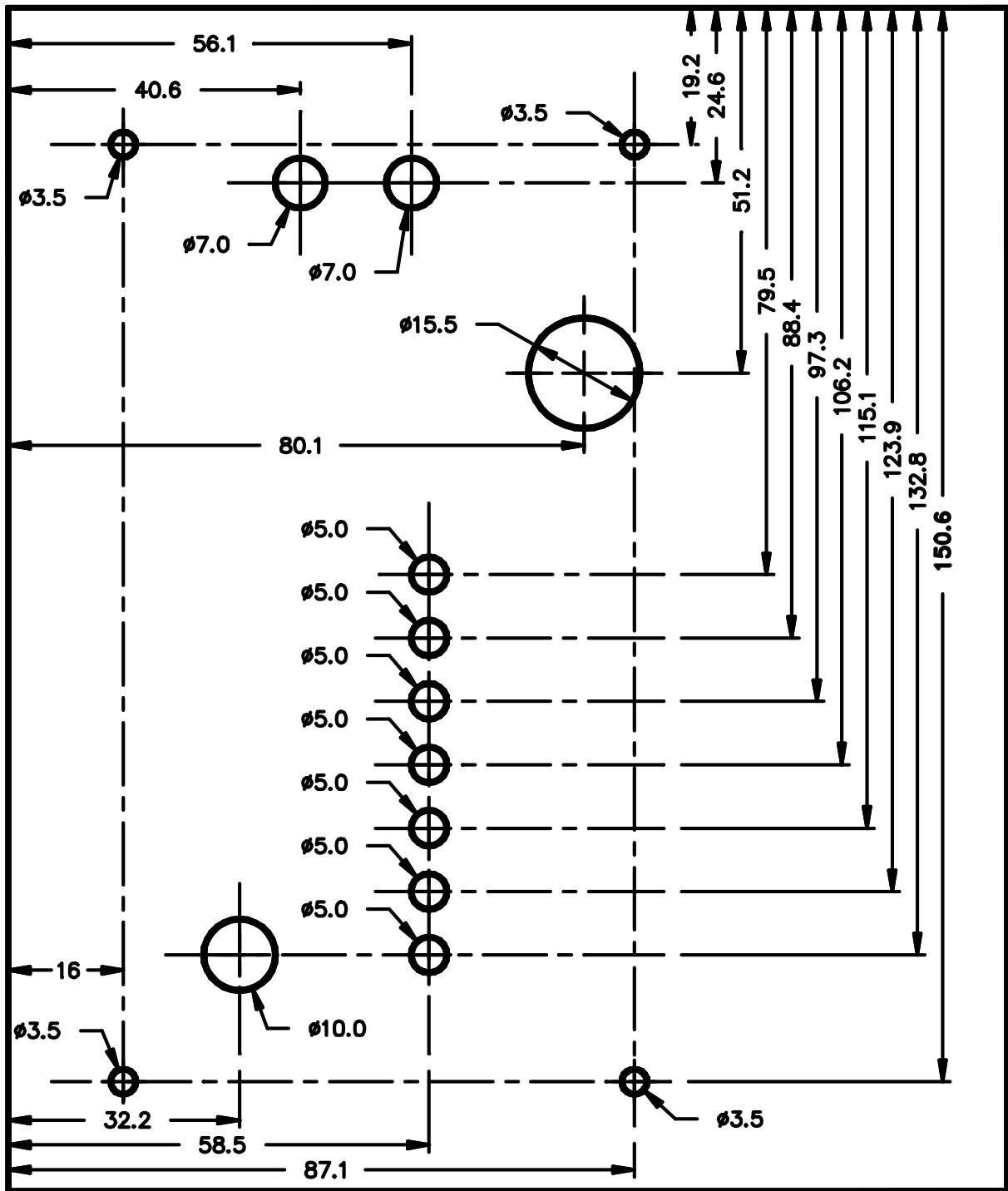


19. CASCADE OPERATION OF TWO UNITS



20. DRILL PATTERN

All values are in mm. (1mm = 0.04")



22. DIAGRAM

